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WINTER-WHEAT VARIETIES FOR THE EASTERN UNITED STATES.

By CLYDE E. LEIGHTY, *Agronomist in Charge of Eastern Wheat Investigations.*

INTRODUCTION.

This bulletin deals principally with the soft red and soft white winter wheats adapted to the eastern half of the United States. It is necessary, however, in discussing the kinds of wheat grown in certain of the States in this section to deal to some extent with the hard red winter wheats and the spring wheats, as there are districts in which these types of wheat may be grown along with the previously mentioned types. There are, in other words, transition zones between the different wheat-growing districts where either of two types of wheat may do about equally well.

The section of the United States here under consideration (the shaded portion of fig. 1) comprises mainly the States east of Nebraska, Kansas, Oklahoma, and Texas and a small eastern portion of each of the States mentioned. In nearly all of this area the average annual rainfall is at least 30 inches, and, although large seasonal variations occur, the area is generally considered as humid. The average annual rainfall in inches is shown by the numbered lines in figure 1.

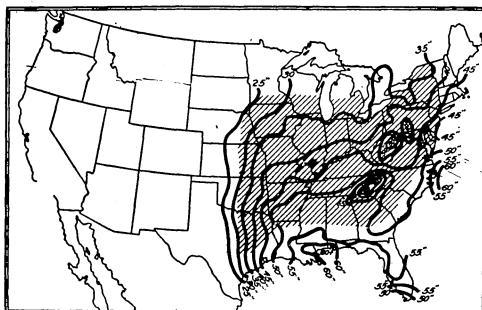


FIG. 1.—Map of the United States, showing by shaded lines that portion of the humid wheat region in which winter wheat is now grown. The boundaries are somewhat arbitrary, there being transition zones on the north and west. The average annual rainfall in inches is shown by the numbered lines.

NOTE.—Of interest in the wheat-growing sections of the eastern United States.

Many varieties of wheat are being grown at the present time by the farmers of this part of the United States, and new varieties are continually being originated and distributed by public or private agencies. The same variety is often known by two or more different names, however, and the actual number of distinct varieties is much smaller than the long list of varietal names would indicate: The number of distinct varieties, nevertheless, is large, although the characters which distinguish them are often minute and sometimes not related to the characters which make the varieties valuable. Careful study and considerable time are required in order to learn to recognize varieties, and comparative tests are necessary to determine their value.

TESTING VARIETIES.

The testing of varieties of wheat has always been an important work of the State agricultural experiment stations and the United States Department of Agriculture. In such tests usually a large number of varieties are grown under conditions as nearly alike as possible, for the purpose of determining the varieties best suited to local conditions.

It usually has been impossible, however, to find any one wheat which is always best for a given locality, as conditions of climate and soil cause fluctuations from season to season. About the best that can be hoped for is to determine several of the varieties which will do well on the average for several seasons. The variety which gives the best average yield is usually the one that should be grown, and not one that yields remarkably well, perhaps, in one season out of many, but whose average yield is low. The recommendations made are based principally upon the results set forth in publications by the State experiment stations.

NORTHWARD ADVANCE OF WINTER WHEAT.

Since the introduction of the hardy varieties of wheat from southeastern Europe there has been a decided northward movement of the winter-wheat area. This has been going on rapidly in recent years. The reasons therefor are the generally larger yields of winter wheat, due (1) to its earlier maturity, thus enabling it to escape hail, hot winds, disease, etc.; (2) to its greater drought resistance; and (3) to the better division of labor which it allows through fall seeding and earlier harvesting.

The acreage of winter wheat in 1909 is shown in figure 2 and the same data for common spring wheat in figure 3.

The average yields in Iowa for five years show an advantage of 4.8 bushels in favor of winter wheat over spring wheat. The results of a 4-year test in Minnesota show a similar advantage of 8.5

bushels. With this evidence at hand it is seen that the region in which winter wheat is grown should be extended northward as rapidly as possible, making use of the hardy varieties and more hardy strains as these are developed, and that the spring varieties should be used only in cases where the fall-sown wheats are winterkilled or where winter-wheat growing has been found by trial to be unprofitable. Large plantings of winter wheat should not be made in any locality, however, until it has been determined by tests lasting at least three years whether or not winter wheat will succeed.

TRANSITION ZONES IN WHEAT GROWING.

As has been stated, there is in northern Iowa and southern Minnesota a transition zone between the district which grows only winter

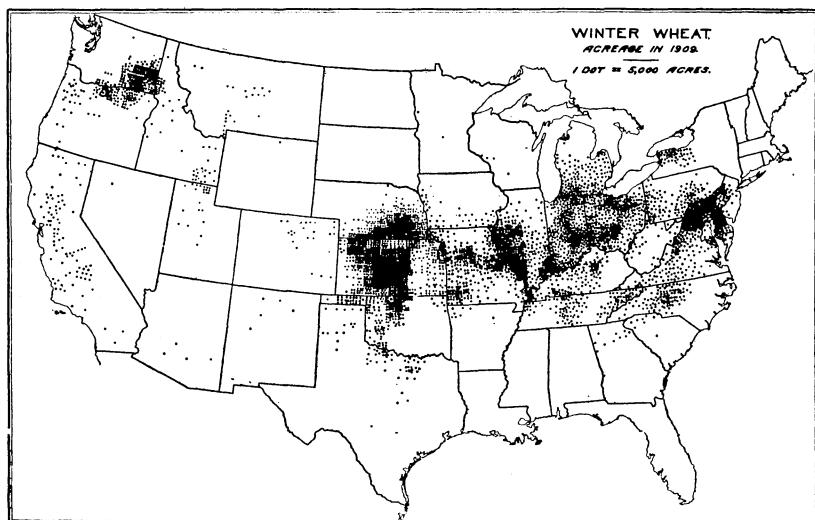


FIG. 2.—Map of the United States, showing the acreage of winter wheat grown in 1909. Each dot represents 5,000 acres. Each county having over 2,500 acres and not more than 7,500 acres has one dot, from 7,500 acres to 12,500 acres, two dots, etc.

wheat and the district which grows only spring wheat. In this zone both spring and winter wheats are grown, often on the same farm. This same condition exists in northeastern Nebraska.

In southern Iowa, southeastern Nebraska, eastern Kansas, central Oklahoma, and north-central Texas there is a similar transition zone, the two types of wheat being the hard red winter wheats of the Turkey type, that are better adapted westward, and the soft red winter wheats, that are better adapted eastward. This transition zone, generally speaking, is that region which has an average annual rainfall of about 30 to 35 inches.

HARD RED WINTER WHEAT.

The hard red winter wheats are of the Turkey or Crimean type, represented principally by the Turkey, Crimean, Kharkof, and Malakof varieties. All of these are usually adapted to localities in which the Turkey variety succeeds. The Kharkof is generally considered to be more hardy than the Turkey variety and consequently better adapted than the latter to northern localities, especially in the northern parts of Illinois, Iowa, and Nebraska and the southern parts of Minnesota and Wisconsin. Certain selected strains of the Turkey wheat seem to be, however, equally as hardy as the Kharkof. There

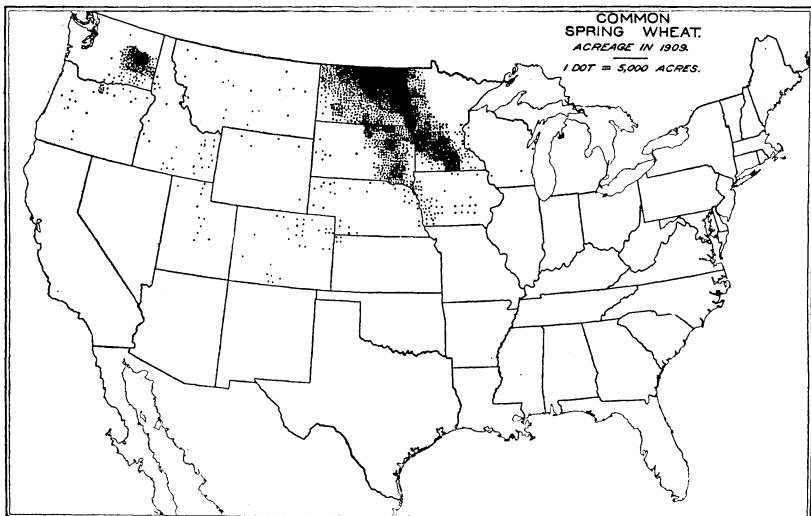


FIG. 3.—Map of the United States, showing the acreage of common spring wheat grown in 1909. Each dot represents 5,000 acres. Each county having over 2,500 acres and not more than 7,500 acres has one dot, from 7,500 acres to 12,500 acres, two dots, etc.

are also strains of these hard wheats, selected at several State experiment stations, which yield much better than the unselected seed commonly grown.

SOFT RED WINTER WHEAT.

Soft red winter wheat is grown in all that part of the United States where wheat is grown east and south of the transition zone already described, except those parts of the North Atlantic and New England States where white wheat or spring wheat is produced. This region is sometimes divided into northern and southern sections; but this division is based upon climatic conditions, since the grain produced in the Southern States is not markedly different from that produced in the Northern States.

For convenience of reference only, the States producing red winter wheat will be grouped under the following heads:

- (1) The southern section west of the Mississippi River, which includes eastern Oklahoma, Arkansas, Texas, and Louisiana.
- (2) The southern section east of the Mississippi River, which includes Tennessee and North Carolina and the States southward.
- (3) The North-Central States, which include Kentucky and the States northward; also Missouri and part of Kansas.
- (4) The North Atlantic States, which include Virginia and the States northward.



FIG. 4.—Ears of bearded winter wheat, representative of the following groups: 1, Mediterranean (group 6); 2, Virginia (group 7); 3, Bearded Winter Fife (group 13); 4, Early Genesee Giant (group 12).

ADAPTED VARIETIES OF SOFT RED WINTER WHEAT.

THE SOUTHERN SECTION WEST OF THE MISSISSIPPI RIVER.

Texas.—For the northern part of Texas, extending southward three or four tiers of counties from the Red River, where the annual rainfall amounts to about 30 inches or more, bearded wheats of the

Mediterranean type (fig. 4) are commonly grown and give on the average better results than the Turkey wheats. In addition to the Mediterranean variety, the Fulcaster and the Ironclad are varieties of soft red bearded wheats commonly grown, while the Poole, Michigan Amber, and German Emperor (all very similar to each other) are good soft red beardless wheats. The area to the west, where the rainfall is less than about 30 inches annually, is included in the hard winter-wheat district, and the Turkey and Kharkof varieties are more certain of giving a good crop. Wheat is not successfully grown on the sandy coastal plains of Texas.

Oklahoma.—Sibley New Golden, Missouri Bluestem, Fulcaster, and Mediterranean (bearded varieties), and Early Red Clawson, New Red Wonder, Red Russian, and Fultz (beardless varieties) are adapted to eastern and southern Oklahoma, where the annual rainfall amounts to about 30 inches or more.

Louisiana.—Wheat has generally failed when grown for grain in Louisiana, and it can not without reservation be recommended as a crop to farmers. On the red lands of northern Louisiana, however, wheat is one of the best winter grazing crops and in favorable seasons may produce a profitable yield of grain. As it fits well in systematic rotations, wheat may often be profitably grown in Louisiana for pasture, feed, and building up the land. The following varieties of soft red winter wheat are reported as having yielded well: Fultz, Red May, Harvest King, Fulcaster, and Purple Straw. Of these varieties the Fulcaster is bearded, while the others are beardless.

Arkansas.—Conditions for wheat growing in southern Arkansas are similar to those of northern Louisiana. On the high lands of the northern part, however, wheat may be more successfully grown. The varieties giving the best results are Kentucky Bluestem, Red May, Fultz, Fulcaster, and Sibley New Golden.

THE SOUTHERN SECTION EAST OF THE MISSISSIPPI RIVER.

Mississippi, Alabama, Georgia, and South Carolina.—The Purple Straw, Bluestem (Alabama Bluestem or Georgia Bluestem), Alabama Red, Georgia Red, Fultz, and Red May (beardless varieties) and the Fulcaster (a bearded variety) seem to be the best for general sowing in the central and northern parts of Mississippi, Alabama, Georgia, and South Carolina. Wheat is more successfully grown on clay or loam than on sandy soil; consequently it is not often grown in the southern parts of those States, but its growing is principally confined to the Piedmont region.

Florida.—Wheat is not successfully grown in Florida.

Tennessee.—Much of Tennessee is rather well suited to wheat growing, the yields and the quality of grain being good. The Poole,

Fulcaster, and Mediterranean varieties are recommended. All produce flour of excellent quality. The Poole is beardless, while the other two are bearded. The Nigger and the Kansas Mortgage Lifter are other bearded varieties that yield well.

North Carolina.—The Piedmont and mountain sections of North Carolina are suited to wheat growing. The Purple Straw, Golden Chaff, Harvest King, Red May, Currell Prolific, and Fultz (beard-



FIG. 5.—Heads of beardless winter wheat, representative of the following groups: 1, Fultz (group 1); 2, Leap Prolific (group 1); 3, Purple Straw (group 1); 4, Poole (group 2); 5, Mealy (group 3); 6, Dawson Golden Chaff (group 10).

less varieties, fig. 5), and the Fulcaster, Lancaster, Dietz, and Red Wonder (bearded varieties) are some of the well-known sorts which have given good yields in this State.

THE NORTH-CENTRAL STATES.

Eastern Kansas.—For eastern and southeastern Kansas it has been found that the Zimmerman, Fulcaster, Mediterranean, Fultz, Cur-

rell Prolific, Harvest Queen, and similar varieties are best adapted. The Harvest Queen is the best wheat tried thus far in the locality of Leavenworth. It is a good yielder, has a stiff straw, and stands up well on rich soil. The Zimmerman succeeds well in the northern and northeastern counties. The other varieties mentioned are better adapted to the eastern and southeastern parts of the State. The Fulcaster and the Mediterranean are the only bearded varieties mentioned. These soft or semihard wheats seem to be the best for growing in that section of Kansas in which the average annual rainfall amounts to more than 35 inches. This includes the first eastern tier of counties on the north and, gradually increasing toward the south, includes the three eastern tiers on the southern border. The section of the State between the lines of 35 and 30 inch rainfall, including the third tier of counties from the east on the north and the fourth and fifth tiers on the south, are probably in the transition zone between the soft and hard wheats.

Missouri.—Extensive varietal tests made at the Missouri Agricultural Experiment Station indicate that the Dietz, Rudy, Mediterranean, Fulcaster, and Lebanon (bearded varieties), and the Poole, Michigan Wonder, Red Wave, Hickman, Beechwood Hybrid, Early Ripe, and Fultz (beardless varieties) are well adapted to conditions in central Missouri. The hard red wheats are worthy of trial in the northwestern corner of the State.

Illinois.—The hard red wheats are best adapted to central and northern Illinois. The Kharkof seems best adapted to the extreme northern part, while the Kharkof, Turkey, Malakof, and Beloglina are all adapted to the remainder of this section.

The soft red wheats are best adapted to southern Illinois. These varieties are among the best for this part of the State: Fulcaster and Rudy (bearded varieties), and Harvest King, Wheedling, Fultz, and Poole (beardless varieties).

Kentucky.—The Jersey Fultz is recommended as the best variety that has been found for the vicinity of Lexington and similar localities in Kentucky. The Extra Early Oakley is also good. These are both beardless wheats very similar in appearance. The Harvest King is another good beardless wheat. Among the bearded wheats the Kansas Mortgage Lifter, Fulcaster, and Lancaster are especially recommended. The Fulcaster is perhaps the best milling wheat among all these varieties (fig. 6).

Indiana.—Cooperative tests made with a number of good varieties throughout the State of Indiana for four years indicate that the Michigan Amber, Dawson Golden Chaff (grains white or amber), and the Rudy yield well throughout this State and have good milling value. The Egyptian Amber and the Farmers Friend have likewise shown themselves valuable in a 2-year test. The Michigan Amber

and Dawson Golden Chaff are beardless, while the others named are bearded varieties. In addition to these wheats the following varieties may be safely recommended: Grains o' Gold, Mealy, Winter King, Poole, Harvest King, Farmers Trust, Red Wave, Reliable, and Fultz.

Ohio.—In a 16-year varietal test at the Ohio Agricultural Experiment Station, Dawson Golden Chaff has led in yield. This wheat.



FIG. 6.—Heads of bearded winter wheat, representative of group 5, as follows: 1, Turkey; 2, Bearded Purple Straw; 3, Fulcaster.

it must be remembered, however, is not a red but an amber or white wheat. The red wheats in the order of average yield are the Nigger, Gipsy, Perfection, Poole, Valley, Mealy, and Harvest King. Each of these varieties has averaged between 30 and 31 bushels per acre for the 16 years tested. The first five of these have been proved by tests to be of value in four widely separated counties and can doubtless be recommended for general sowing in the State. The Gipsy,

Nigger; and Valley are bearded varieties, while the others named are beardless.

Michigan.—Comparative yields secured and baking tests made with a number of wheats for three years at the Michigan Agricultural Experiment Station indicate that Shepherd Perfection is the best red wheat for general growing in that locality. It was exceeded in yield, however, by the white wheats, Early Windsor and Dawson Golden Chaff. The Budapest, a red wheat, gave good yields, but slightly under the others. The American Banner, a white wheat, yielded well for two years and was winter resistant. Of these varieties, Shepherd Perfection and Budapest are bearded, while the others are beardless.

THE NORTH ATLANTIC STATES.

Virginia.—Varieties adapted to the western part of Virginia are the Fulcaster, Blue Ridge, and Mediterranean (bearded varieties), and the Fultz, Harvest King, and Perfection (beardless varieties). The bearded varieties have yielded better than the beardless ones. For the northern and eastern parts of the State, tests at Arlington indicate that the following varieties are all well adapted: Purple Straw, Poole, and China (beardless varieties), and Dietz, Bearded Purple Straw, Virginia, and Mammoth Red (bearded varieties) of the red wheats and Dawson Golden Chaff of the white wheats. Many other varieties yielded about as well, and it is impossible to say that any one is best for general sowing.

West Virginia.—Extensive varietal tests have not been made in West Virginia. The Gipsy, Poole, Dawson Golden Chaff, Nigger, Velvet Chaff, and Rudy are some of those doing well in tests now being conducted at the State experiment station.

Maryland.—The following varieties of wheat are adapted to Maryland: China and Currell Prolific (beardless red wheats), Bearded Purple Straw, Dietz Longberry, Turkish Amber, and Mammoth Red (bearded red wheats), and Dawson Golden Chaff (a beardless white wheat).

Delaware.—In Delaware the following varieties of wheat have yielded well and seem adapted to the conditions: Rudy, Gipsy, Red Wonder (bearded varieties), and Leap Prolific, Currell Prolific, and Perfection (beardless varieties).

New Jersey.—Fulcaster (bearded) and Fultz (beardless), both red wheats, and Dawson Golden Chaff (a beardless white wheat) can be recommended for growing in New Jersey.

Pennsylvania.—Varieties of red winter wheat adapted to Pennsylvania are the Harvest King (good for rich land), Fulcaster (not so good for low lands), China, Turkish Amber, Currell Prolific, Ontario Wonder, and Reliable. These, however, have been out-

yielded by Dawson Golden Chaff, a white wheat. The Jones Longberry No. 1 and the Gold Coin (or Fortyfold), white wheats, have also done very well. The Fulcaster, Turkish Amber, Jones Longberry No. 1, and Reliable are bearded, while the others named are beardless varieties.

New York.—New York should probably be considered in the white winter-wheat district, as white wheats are most commonly grown. Several of the red wheats, however, have yielded well in recent tests. The best of these are the Prosperity and the Fultz, beardless varieties, and Rural New Yorker No. 57, a bearded variety. Adapted varieties of white wheat are given below.

SOFT WHITE WINTER WHEAT.

The principal district growing soft white winter wheat comprises New York and Pennsylvania and portions of the States lying immediately south and east of them. White wheat is not the only kind grown in this district, red wheat being also largely grown. On the other hand, more or less white wheat is grown throughout the soft red winter wheat district.

In New York and under similar conditions, speaking generally, white wheats yield more grain per acre, possess stronger straw, weigh a little less to the measured bushel, have slightly softer grains, and furnish a better pastry flour but a somewhat weaker bread flour than the red varieties.

DEMAND FOR SOFT WHITE WHEAT.

There is a considerable demand for soft white wheat in New York and adjoining States by manufacturers of whole-wheat foods and pastry flours. When the local supply is inadequate, this class of wheat is sometimes brought from the Pacific coast. There is also a large local demand for wheat as poultry feed in these States and in New England, and the variety giving the largest yields of grain will probably be found most profitable where such demand exists, irrespective of the milling value of the wheat. Where white wheat yields best, therefore, and there is a good market for it, the growing of such wheat is recommended.

ADAPTED VARIETIES OF SOFT WHITE WINTER WHEAT.

The white wheats which have succeeded well in the North-Central and North Atlantic States are as follows:

Indiana.—Dawson Golden Chaff.

Michigan.—Early Windsor, Dawson Golden Chaff, American Banner.

Ohio, Virginia, West Virginia, Maryland, and New Jersey.—Dawson Golden Chaff.

Pennsylvania.—Dawson Golden Chaff, Gold Coin (or Fortyfold).

New York.—Dawson Golden Chaff, Gold Coin (or Fortyfold), New Soule, Extra Early Windsor, Jones Longberry No. 1, Early Genesee Giant.

Dawson Golden Chaff is probably the leading variety of soft white winter wheat. It has been one of the highest yielding varieties among all the wheats tested in the States just mentioned. This variety stands up well in the field and is above the average in winter resistance. The grains are somewhat harder than those of most other white wheats. In several milling and baking tests that have been made it has given a good yield of flour, rather low in total protein content, but containing gluten of excellent quality.

WHEAT IN THE NEW ENGLAND STATES.

Very little wheat is raised in the New England States. In 1913 Maine and Vermont produced 76,000 and 24,000 bushels, respectively. No other State of this group is credited with wheat production. Spring wheat is the only kind reported as being grown in the two States just mentioned. The fife and the bluestem groups, spring wheats, are adapted to these States.

Tests made by the Connecticut Agricultural Experiment Station at New Haven during the seasons of 1911-12 and 1912-13 with seed of 14 varieties of winter wheat furnished by the United States Department of Agriculture indicate that all of the varieties tried can be successfully grown in that locality. Although all these varieties were grown under adverse soil conditions, the average yield for the two years is above 18 bushels in every case. The six leading varieties in the order of yield are Dawson Golden Chaff, Fultzo-Mediterranean, Dietz, Bearded Winter Fife, Fultz, and Maryland Flint. Dawson Golden Chaff yielded at the rate of 29 bushels per acre, while the other five varieties each yielded approximately 23 bushels per acre. It is probable that Dawson Golden Chaff is one of the best yielding winter varieties for the New England States.

There is a large local demand in New England for wheat as a poultry or stock feed. It should not be difficult for several farmers in almost every neighborhood to sell at a good price to their neighbors all the wheat which they can raise. The growing of wheat on land adapted to its culture is therefore likely to prove profitable in New England, and the farmers of this section would do well to consider carefully the addition of wheat to the crops which they grow. Winter wheat will doubtless give better average yields than spring wheat if proper cultural methods are employed and suitable varieties are used.

IMPROVEMENT OF VARIETIES.

Many farmers are doubtless growing inferior varieties of wheat. The first concern of every grower should be to determine by test or

otherwise the variety best suited to his conditions. Having determined this point, he should then begin and faithfully continue systematic efforts to improve this variety for the conditions of his farm. The method of improvement to be adopted should depend upon the importance of the wheat crop on the farm in question and the time and facilities at the disposal of the farmer. Every farmer should at least use clean, plump, heavy seed and should also be on the lookout for striking variations, or sports, which probably occur rarely in a field of wheat, but which may occur at any time. Several of our most valuable varieties have originated from single plants, slightly different from others about them, which have been found, preserved, and propagated by careful, observant farmers.

Another method of wheat improvement is by the selection of good heads or good plants from the general field and growing the seed from each individual head or plant in separate rows. At harvest time the best rows are thrashed and preserved separately and each lot thus obtained is sown again in separate rows of suitable length. This is continued year after year until a few superior strains are obtained, which may be rapidly increased in larger plats.

The method of most general application, however, is one which may be called "mass selection." No great amount of time or extra labor is required by this method to secure satisfactory results. In applying it, a field of wheat is examined at harvest time and enough good heads are selected to make a bushel or more of seed. This is thrashed separately and sown in the ordinary way in a field or plat of good fertility. It may be sown in a marked portion of a general wheat field. At harvest time the best heads are picked from the plat sown with the special seed, just as they were picked from the general field the year before, and these heads are handled and sown as were those selected the previous year. The remainder of the plat is cut and thrashed separately, and the grain thus obtained is used as seed for the general crop. This method of selection should be continued year after year as a means of providing good seed for the general wheat crop on the farm.

THE GROUPING OF ADAPTED VARIETIES OF WHEAT.

The wheats recommended herein are grouped below in accordance with some of the most obvious and most easily determined characters. The terms used in the description are red, white, and amber—to denote the color of the wheat kernels; bearded and beardless—to denote the presence or absence of beards on the heads; white or yellow and red or brown—to denote the color of the chaff (no attempt being made to distinguish white from yellow or red from brown); and velvet and smooth—to denote the presence or absence of hairs or velvet covering on the chaff. The following classification

is made according to the descriptions most commonly given of the different varieties:

- (1) Red kernels, beardless, smooth white or yellow chaff.

Hard spring.—Fife (Minnesota No. 163).

Soft or semihard winter.—Alabama Bluestem, Alabama Red, Extra Early Oakley, Fultz, Fultzo-Mediterranean, Georgia Bluestem, Georgia Red, Harvest Queen,¹ Hickman, Jersey Fultz, Leap Prolific, Ontario Wonder, Prosperity, Purple Straw, Red May,² Zimmerman.

- (2) Red kernels, beardless, smooth red or brown chaff.

Soft or semihard winter.—Beechwood Hybrid, China, Currell Prolific, Early Red Clawson, Early Ripe, German Emperor,³ Golden Chaff, Harvest King, Michigan Amber, Michigan Wonder, Perfection, Poole Red Russian, Red Wave, Rochester Red, Wheedling.

- (3) Red kernels, beardless, velvet white or yellow chaff.

Hard spring.—Bolton Bluestem, Haynes Bluestem, Minnesota No. 169 (selection from Haynes Bluestem).

Soft or semihard winter.—Mealy, Jones Winter Fife.

- (4) Red kernels, beardless, velvet red or brown chaff.

Soft or semihard winter.—St. Louis Grand Prize.

- (5) Red kernels, bearded, smooth white or yellow chaff.

Soft or semihard winter.—Bearded Purple Straw, Budapest, Dietz (or Dietz Longberry), Egyptian Amber, Farmers Friend, Fulcaster, Grains o' Gold, Gipsy, Ironclad, Kansas Mortgage Lifter, Lebanon, Mammoth Red, Nigger, Red Wonder,⁴ Reliable, Rudy, Turkish Amber, Valley, Winter King.

Hard winter.—Beloglina, Crimean, Kharkof, Malakof, Turkey.

Hard spring.—Early Java, Johnson, Preston.

- (6) Red kernels, bearded, smooth red or brown chaff.

Soft or semihard winter.—Blue Ridge, Farmers Trust, Lancaster, Mediterranean, Missouri Bluestem, Shepherd Perfection, Sibley New Golden.

- (7) Red kernels, bearded, velvet white or yellow chaff.

Soft or semihard winter.—Rural New Yorker No. 57, Virginia.

- (8) Red kernels, bearded, velvet red or brown chaff.

Soft or semihard winter.—Velvet Chaff.

- (9) White or amber kernels, beardless, smooth white or yellow chaff.

Soft winter.—Early Ontario, Kentucky Bluestem.

- (10) White or amber kernels, beardless, smooth red or brown chaff.

Soft winter.—American Banner, Early Windsor, Dawson Golden Chaff, Gold Coin (or Fortyfold), New Soule.

- (11) White or amber kernels, bearded, smooth white or yellow chaff.

Soft winter.—Seneca Chief.

- (12) White or amber kernels, bearded, smooth red or brown chaff.

Soft winter.—Early Genesee Giant, Jones Longberry No. 1.

- (13) White or amber kernels, bearded, velvet white or yellow chaff.

Soft winter.—Bearded Winter Fife.

¹ Another variety having white kernels is grown under this name.

² A red or brown chaffed strain is also grown.

³ A white-chaffed strain is also grown.

⁴ A red-chaffed strain is also grown.